Original Article

Visual disability in Newly Diagnosed Primary open Angle Glaucoma (POAG) Patients in a Tertiary Hospital in Nigeria

Awoyesuku E. A, Ejimadu C.S.
Department of Ophthalmology, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.

ABSTRACT
BACKGROUND: Glaucoma remains the second leading cause of blindness worldwide and the highest cause of irreversible blindness worldwide. In Nigeria, Glaucoma accounts for 16% of blindness and primary open angle glaucoma is the most prevalent clinical type.
AIM: The aim of this study is to assess the visual disability resulting from glaucoma in newly diagnosed POAG patients in University of Port Harcourt Teaching Hospital.
MATERIALS/METHOD: This is a retrospective study of newly diagnosed glaucoma patients referred from the general ophthalmology clinic to the glaucoma clinic over a 12 month period (January-December 2010). All patients had a glaucoma workup including Snellen distant visual acuity, slit lamp examination, Goldman applanation tonometry, gonioscopy, dilated fundoscopy with +78 diopter lens as well as perimetry. All examinations were carried out by both authors. Patients with other co-morbidities such as cataract and retinal/macular pathologies were excluded from the study.
RESULTS: A total of 98 patients were reviewed. There were 34 males and 27 females, giving a male to female ratio of 1.3:1.The average age was 54.2 years and most patients (>80%) were in the 40-59 year age group. Of the 98 patients reviewed, 62.2%had POAG. 30 patients were blind by distant visual acuity criteria while 45 patients were blind by central visual field criteria.
CONCLUSION: POAG is the most prevalent clinical subtype of glaucoma in Nigeria and sub- Saharan Africa. Paucity of symptoms in early stages of the disease and late presentation is a characteristic finding in our clinical environment. Our study showed that POAG in our environment is associated with marked visual disability at the time of presentation.
KEY WORDS: Visual disability, POAG, Tertiary Hospital, Nigeria

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INTRODUCTION

Primary open angle glaucoma (POAG) is a spectrum of disorders typified by a characteristic optic neuropathy and visual field loss in eyes with open drainage angles[1]. Of the glaucomas, POAG is the most prevalent in the African population and in Nigeria [2,3]. Primary open angle glaucoma is one of the leading causes of avoidable blindness[4]. Unlike blindness from cataract, glaucomatous optic nerve damage is irreversible, and prevention of glaucoma is one of the priorities of the World Health Organization (WHO). Several studies done globally as well as locally have shown that POAG is the most prevalent clinical type of glaucoma[5-8]. Approximately 70% of glaucoma is found in developing countries. It is estimated that two thirds of those blind are cases of POAG[9].

In Nigeria, several studies have been done using visual acuity criteria which showed that glaucoma is responsible for 17.1-43.3% of bilateral blindness[10-14]. In studies in our setting, glaucoma has been found to be a major cause of blindness [15,16] but none has taken into account the degree of visual disability on presentation. This retrospective study was carried out at the glaucoma clinic of the Ophthalmology department of the University of Port Harcourt Teaching Hospital to determine the degree of visual disability in newly diagnosed POAG patients presenting to our facility over the period of one year and proffer suggestions on how to reverse the trend.

MATERIALS AND METHODS

This clinic based retrospective study was carried out in the Ophthalmology Clinic of the University of Port Harcourt Teaching Hospital (UPTH) a tertiary health care facility within Rivers State and which also serves the neighboring states of Bayelsa, Abia and Akwa Ibom. The Glaucoma Clinic runs once a week and glaucoma suspects seen in the general ophthalmology clinics are referred to this clinic for diagnosis and follow-up. All new POAG patients referred to the Glaucoma Clinic over the period of one year (January to December 2010) who did not have other factors contributing to their visual disability were included in the study. Their demographic data including sex and age were noted and a glaucoma workup was done.

All examinations were carried out by both authors and the examinations included applanation tonometry (Goldman applanation tonometer(HS Clement Clarke International), gonioscopy (Goldman triple mirror-Volk) and Slit lamp examination (Keeler SL-16) with +78D (Volk)by the principal author and perimetry (Humphrey Carl Zeiss) as well as its interpretation by the co- author. Diagnostic criteria for POAG was glaucomatous optic nerve damage (vertical/cup disc ratio >0.5 and glaucomatous atrophy), visual field loss,

Correspondence to: Dr Elizabeth Awoyesuku, Department of Ophthalmology, University of Port Harcourt Teaching Hospital
Email: awoyeliz@yahoo.com, Mobile: +2348033088992

gonioscopically normal anterior chamber angles, adult onset (=40 years) as well as the absence of secondary causes of open angle glaucoma. An intraocular pressure of 10-21mmHg was taken as normal. Distant visual acuity was measured using a Snellen chart at 6 meters and where the subject could not see 6/60, the test was repeated at 3 meters. Visual acuity was repeated with pin hole if the vision was less than 6/18.

For purposes of this study; visual disability/blindness by visual acuity criteria was visual acuity less than 3/60 in the better eye. Threshold perimetry was obtained with the Humphrey automated visual field analyzer and visual disability/blindness by visual field criteria was central visual field $<10^0$ of fixation. In cases of marked visual disability visual fields were tested by confrontation.

RESULTS

A total of 98 patients were diagnosed with glaucoma. The remaining 22 patients were excluded because 8 patients had hazy corneas and gonioscopy could not be done, while 14 others had other forms of glaucoma.

Of the 98 patients with glaucoma, 61 (62.2%) had POAG. The sex distribution was 34 males (55.7%) and 27 females (44.3%) giving a male: female ratio of 1.3:1. (Table 1) The mean age was 54.2 years, age range 40-83 years with more than 80% of the patients in the 40- 59 year age group. (Table 1).A total of 16.4% of patients presented with normal vision (6/6-6/18), while 34.4% presented with visual impairment (6/24-6/60) and 49.2% were blind(<3/60) on presentation (Table 2).Of the 61 patients reviewed, central visual field analysis revealed that 16patients (26.2%) had visual fields greater than 10^0 of fixation while 45patients (73.8%) had central visual fields less than 10^0 of fixation (Table 3).

Table 1: Age and sex distribution of POAG patients

Age group in years	Sex		Total
	Male (%)	Female (%)	
40-49	8(23.5%)	14(51.9%)	22(36.1%)
50-59	18(53.0%)	11(40.7%)	29(47.5%)
60-69	0(0.0%)	2(7.4%)	2(3.3%)
70-79	5(14.7%)	0(0.0%)	5(8.2%)
>81	3(8.8%)	0(0.0%)	3(4.9%)
Total	34(100%)	27(100%)	61(100%)

Table 2: Presenting Visual acuity of POAG patients

Visual acuity	Number/percentage
6/6-6/18	10(16.4%)
6/24-6/60	21(34.4%)
<3/60-LP	21(34.4%)
NPL	9(14.8%)
Total no. of patients	61(100%)

Table 3: Presenting central visual field (degrees from fixation) of POAG patients

CVF	No. of Patients
$>10^0$	16(26.2%)
$<10^0$	45(73.8%)
Total	61(100%)

Consequently, a total of 30 patients (49.2%) were blind by visual acuity criteria while 45 patients (73.8%) were blind by visual field criteria at presentation.

DISCUSSION

The manifestation of glaucoma in black populations is different from that in Caucasians. In blacks, it is predominantly open angle in nature, has an earlier onset with high IOP at time of presentation, and relatively more aggressive course leading to early blindness[16,17].

Our study revealed that newly diagnosed POAG patients at presentation already had marked visual disability with 49.2% of patients already blind by visual acuity criteria and an even higher number (73.8%) patients blind by visual field criteria. This seems to correlate favourably with similar hospital- based studies done in Nigeria by Omoti et al[18] in which 24.7% were blind when using visual acuity as the criteria, while 56.5% of patients were blind by visual fields criteria at first presentation. This may be due to similarities in the age structure of patients studied and similar socio-geographic area studied with possibly similar health seeking behavior. Enock et al[19] in their study reported bilateral blindness in 17.7 % by visual acuity criteria and 51.7 % blind based on visual field criteria. Gyasi et al[20] in Ghana, also found that 34.1% of patients were bilaterally blind at presentation while between 51.3% and 52.2% were uni-ocularly blind by visual acuity criteria. As part of the study limitations they noted that the percentage of blind patients would have been much higher if they had used visual acuity criteria. Another hospital based study in East Africa found that 30% of patients had visual impairment and 29% were blind at presentation[21].

Other international studies have quoted figures approx. of 21.7% of blindness at first presentation based on visual acuity criteria [22-24].Kooner et al[25] in their work found figures as high as 58.5% for bilateral blindness by visual acuity criteria while up to 71.7% were blind by visual field criteria this is very similar to the results from our setting. The implications for this will be an increasing prevalence of blindness from glaucoma.

The reasons for such high incidence of blindness for glaucoma in our region will not be too far from the reasons put forward by Egbert [26], that, the high incidence of blindness from glaucoma in our sub region is due to

the aggressive nature of the disease in Africans, late presentation and the paucity of Ophthalmologists who can perform trabeculectomies as a regular treatment option. Medical treatment of glaucoma is often associated with poor compliance especially following financial constraints.

Our recommendations are therefore an increased rate of case detection by frequent screening of population at risk, piggy back of glaucoma services on all ready existing cataract surgical services already being provided by non-governmental institutions. Increased public awareness/ campaigns, routine eye checks and an increased surgical uptake.

Further studies will be necessary to check for the risk factors for blindness in our patients.

CONCLUSION

POAG in our clinical setting has been shown to be associated with marked visual disability at presentation. This may be as a result of late presentation to the health facility by these patients. There are a lot of eye surgical camps ongoing in our region but all of these address cataracts. There is a need to piggy back glaucoma case detection and treatment onto these surgical programs to enhance case detection and encourage early treatment to reduce the risk of blindness associated with late presentation.

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